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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/335,518	06/18/1999	FUJIO FURUHATA	Q54021	6567

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EXAMINER

YE, LIN

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 09/30/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/335,518

Applicant(s)

FURUHATA, FUJIO

Examiner

Lin Ye

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-18 filed on 7/09/03 have been considered but are moot in view of the new ground(s) of rejection. Since a new ground of rejection is being applied against unamended independent claims 1 and 9, this action is **not** made final.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadekodi et al. U.S. Patent 4,712,137 in view of Boyd et al. U.S. Patent 6,166,831.

Referring to claim 1, the Kadekodi reference discloses in Figure 4, an image-capturing device, comprising: a substrate (CCD Chip 88); and a group of image sensing elements includes: a plurality of rows (90 and 94) of image sensing elements, wherein image sensing elements in each of said plurality of rows are linearly arranged on said substrate; wherein each of said rows (90 and 94) of image sensing elements is offset ($S_x = w/2$, w is pixel width, see Col. 4, lines 45-65) with respect to adjacent rows of image sensing elements by an amount which is smaller than the width of an image sensing elements in said plurality of rows of image sensing elements; and wherein said rows of image sensing elements are

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arranged in parallel at a pitch equivalent to at least twice the height of said image sensing element (with the row 92 of opaque material being 5microns high, and each row of image sensing element being 5 microns high, so the rows of image sensing elements 90 and 94 are arranged in parallel at a pitch equivalent to twice the height of said image sensing element, see Col. 7, lines 55-59). However, the Kadekodi reference does not explicitly show the image-capturing device is color image capturing device includes a plurality of groups with respectively correspond to a plurality of colors.

The Boyd reference discloses in Figures 4-6, a color image capturing device (scanner 10), comprising: a substrate (image sensor 12) (See Col. 2, lines 42-45); and a plurality of groups of image sensing elements (shown in Figure 6), formed on said substrate, which respectively correspond to a plurality of colors; wherein each of said groups of image sensing element s comprises: a plurality of rows of image sensing elements (for example row 30c and 32c as shown in Figure 5), wherein image sensing elements in each of said plurality of rows are linearly arranged on said substrate; in Figure 2, wherein each of said rows of image sensing elements is offset with respect to adjacent rows of image sensing elements by an amount which is smaller than the width (W1) of an image sensing elements in said plurality of rows of image sensing elements; and wherein said rows of image sensing elements are arranged in parallel. The Boyd reference is evidence that one of ordinary skill in the art at the time to see more advantages for the image capturing device is a color image capturing device which including at least three groups of image sensing elements, one for red, one for green and one for blue so that could allowed the device to have more flexibility reading a color image and not just black-and-white image. For that reason, it would have been obvious to see the image-

capturing device is color image capturing device includes a plurality of groups with respectively correspond to a plurality of colors disclosed by Kadekodi.

Referring to claim 2, the Boyd reference discloses wherein said plurality of groups of image sensing elements respectively correspond to the colors of red green and blue as shown in Figure 6 (See Col. 4, lines 17-21).

Referring to claim 3, the Kadekodi reference discloses wherein the group of image sensing elements comprises: a first row (90) of image sensing elements; and a second row (94) of image sensing elements; wherein said second row of image sensing elements is offset (S_x , in Figure 2b) from said first row of image sensing elements by a predetermined amount which is equivalent to one half of the width of an image sensing element in said second row of image sensing elements as shown in Figure 4 ($S_x = w/2$, w is pixel width, see Col. 4, lines 45-65).

Referring to claim 4, the Kadekodi reference discloses all subject matter as discussed with respect to same comment as with claim 3.

4. Claims 5-8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadekodi et al. U.S. Patent 4,712,137 in view of Boyd et al. U.S. Patent 6,166,831 and Philbrick E.P. Publication 0663763 A2.

Referring to claim 5, the Kadekodi and Boyd references disclose all subject matter as discussed in respected claim 1, except the reference does not explicitly states a shield having an opening which is smaller that a light-receiving area is provided on a light-receiving surface of image sensing elements in said plurality of groups of image sensing elements.

The Philbrick reference discloses in Figures 5 and 6, an image capture device comprising a first and a second linear arrays of individual imaging photo detectors aligned along a scanning line; wherein a shield (51) is provided on a image sensing elements (pixels 50), shield having an opening which is smaller than a light-receiving area of said image sensing elements for shielding a periphery of said image sensing elements from light (See Col. 6, lines 1-8 and lines 20-25). The Philbrick reference is evidence that one of ordinary skill in the art at the time to see more advantages for each image sensing elements having a shielding layer, because as a result, a very high aperture MTF can be obtained and low diffusion crosstalk between photodiodes of the arrays can be obtained. For that reason, it would have been obvious to see the a shield is provided on a light-receiving surface of image sensing elements in said plurality of groups of image sensing elements disclosed by Kadekodi.

Referring to claim 6, the Kadekodi, Boyd and philbrick references disclose all subject matter as discussed with respected to same comment as with claim 5.

Referring to claim 7, the Kadekodi, Boyd and philbrick references disclose all subject matter as discussed with respected to same comment as with claim 5.

Referring to claim 8, the Kadekodi, Boyd and philbrick references disclose all subject matter as discussed with respected to same comment as with claim 5.

Referring to claim 18, the Kadekodi discloses shielding part (mask layer) is formed by a metallic (aluminum or other suitable material) plate (See Col. 6, lines 61-65).

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5. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadekodi et al. U.S. Patent 4,712,137 in view of Boyd et al. U.S. Patent 6,166,831 and Kim U.S. Patent 5,859,712.

Referring to claim 9, the Kadekodi and Boyd references disclose all subject matter as discussed in respected claim 1, except the reference does not explicitly shows a light source, manuscript, a plurality of mirrors and a condenser lens for the image scanner instead of just saying the object or paper being scanned (14) that is being moved relative to the image sensor (12).

The Kim reference disclose in Figure 1A, a document image scanner includes light source (lamp) for irradiating a manuscript; a plurality of mirrors for reflecting light emitted from said light source and for reflecting light reflected form a surface of said manuscript; and a condenser lens for focusing said light reflected by said mirrors. It is well known in the art that an advantage of the scanner reading an image through a man-scan by reradiating a light source to one-line image on manuscript and focusing a reflective light on a linear sensor. For that reason, it would have been obvious to one of ordinary skill in the art at the time to see the scanner including a light source, manuscript, a plurality of mirrors and a condenser lens for focusing light reflected by mirrors disclosed by Kadekodi.

Referring to claim 10, the Kadekodi and Boyd references disclose all subject matter as discussed with respected to same comment as with claim 2.

Referring to claim 11, the Kadekodi and Boyd references disclose all subject matter as discussed with respected to same comment as with claim 3.

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Referring to claim 12, the Kadekodi and Boyd references disclose all subject matter as discussed with respected to same comment as with claim 3.

6. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadekodi et al. U.S. Patent 4,712,137 in view of Boyd et al. U.S. Patent 6,166,831, Kim U.S. Patent 5,859,712 and Philbrick E.P. Publication 0663763 A2.

Referring to claim 13, the Boyd and Kim references disclose all subject matter as discussed in respected claim 9, and also respected to same comment as with claim 5.

Referring to claims 14-16, the Boyd reference discloses al subject matter as discussed with respected to same comment as with claim 13.

Allowable Subject Matter

7. Claim 17 objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claim 17, the prior art does not teach or fairly suggest a color image capturing device having said rows of image sensing elements according to claim 1 are arranged in parallel at a pitch equivalent to **four times** the height of said image sensing element.

Conclusion

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8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Sato Nobuyuki J.P. Publication 07-273941 discloses that a solid-state image pickup device having two line sensors with different phases are integrally arranged at the same sampling pitch.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Lin Ye** whose telephone number is **(703) 305-3250**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC. 20231

Or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

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Lin Ye

September 22, 2003

VU LE
PRIMARY EXAMINER